

# **PESTICIDES AND THE CHESAPEAKE BAY WATERSHED PROJECT**

## **PUBLIC HEALTH IMPLICATIONS**

By

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# Working Group 10 Pesticides of Concern

- Atrazine
- Metolachlor
- Chlorpyrifos (CPF)
- Chlorthalinol
- Glyphosate
- Paraquat
- Simazine
- Cypermethrin
- Alachlor
- Imidacloprid

# AN EMERGING ENVIRONMENTAL HAZARD

Triclosan

# ATRAZINE (Herbicide)

- Most commonly used herbicide (in US & worldwide)
- Acts as an endocrine disruptor
- A suspect human carcinogen (cancer-causing agent)

# ATRAZINE (Herbicide) ANIMAL STUDIES

- Detrimental effects in amphibian populations
- Impairs sexual development in frogs
- A major factor in amphibian population decline globally
- A decline of freshwater mussel populations

# ATRAZINE (Herbicide) HUMAN IMPACT & PUBLIC HEALTH IMPLICATIONS

- Hazardous levels of atrazine in rural & urban water wells
- Contamination of groundwater
- Several European countries banned atrazine use
- EU withdrew regulatory approval for atrazine in 2003

# CHLORPYRIFOS (CPF) (Insecticide)

- An organophosphate insecticide
- Impairs fetal growth and development in children
- A suspect carcinogen (cancer-causing agent)
- May decrease heart rate & cardiac output, and increase BP

# CHLORPYRIFOS (CPF) (Insecticide) ANIMAL STUDIES

- Increased concentrations of CPF given to exposed rabbits caused decreases in HR and CO
- Increased doses of CPF in male rats caused increased BP, decreased HRs and reduced motor activity
- Toxic effects exhibited in the normal growth patterns of fish and shellfish

# CHLORPYRIFOS (CPF) (Insecticide) & METOLACHLOR (Herbicide) HUMAN STUDIES AND CANCER

- A cohort study of pesticide applicators and spouses of farmer applicators
- Participants completed a self-administered questionnaire
- Cancer incidence determined through population-based cancer registries
- Excess lung cancers from exposure

# TRICLOSAN

## (An emerging hazard)

- Marketed widely to protect children from germs
- Found in deodorants, cosmetics, toothpastes, anti-bacterial soaps, fabrics, & plastics
- Regular soap & water just as effective
- Anti-bacterial resistance problems developing

# TRICLOSAN

(An emerging hazard)

## Animal Studies

- Acts as an endocrine disrupter
- Found in significant amounts in aquatic environments
- Detrimental effects on phytoplankton populations and algae growth
- Highly toxic to aquatic animals
- Triclosan products survive treatment at sewage plants

# THE PRECAUTIONARY PRINCIPLE

## Definitions

- **Rio Declaration (1992):**

“In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”

# THE PRECAUTIONARY PRINCIPLE

## Definitions

- **Wingspread Statement:**

“When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationship are not fully established scientifically.”

# THE PRECAUTIONARY PRINCIPLE

## Application

- **Elements**

2. Shift the questions asked in environmental & health policy

- Instead of asking:

What level of risk is acceptable?

- Ask:

How much contamination can we avoid?

What are the opportunities or alternatives for prevention?

In the first place, is this activity needed?

# THE PRECAUTIONARY PRINCIPLE

## Application

- **Elements**

2. Shift Presumptions

- Rather than presume that certain substances or economic activities are safe

  - until proven dangerous

- Establish a presumption in favor of protecting the environment and public

  - health in the face of uncertain risks.

# THE PRECAUTIONARY PRINCIPLE

## Application

- **Elements**

3. Conduct transparent and inclusive decision-making processes.

-A more participatory process could better

assist decision makers in anticipating and

preventing harm to ecosystems and human

health



Questions?